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symbol      En          = 3          '0 = Idle      1 = Enable
symbol      DB4         = 4          'LCD Data Line 4
symbol      DB5         = 5          'LCD Data Line 5
symbol      DB6         = 6          'LCD Data Line 6
symbol      DB7         = 7          'LCD Data Line 7

'      *** Inputs ***
symbol      In0         = pin0       'Input Pin 0 - N/U
symbol      ScaleADC    = 1          'Input Pin 1 - ScaleADC
symbol      In2         = pin2       'Input Pin 2 - Not Used
symbol      SensorIn    = pin6       'Input Pin 6 - Sensor Input
symbol      RunScale    = pin7       'Input Pin 7 - Run / Scale

'      *** Variables ***
symbol      FlagBig     = bit0       'Dist > 10M
symbol      Temp        = b1         'Temp Variable
symbol      DByte       = b2         'Common Data Byte
symbol      RSbit       = b3         'Data/Command Mask
symbol      DStart      = b4         'EEPROM/RAM Data Start
symbol      DEnd        = b5         'EEPROM/RAM Data End

symbol      Scale       = w4         'Scale multiplier b 8 & b 9
symbol      CalcVar     = w5         'Temp Var                b10 & b11

symbol      TotalRev    = w6         'Total Distance b12 & b13

'      *** Constants ***
symbol      RSCMDmask   = %00000000 'Select LCD Command register
symbol      RSDATmask   = %00000100 'Select LCD Data register
symbol      WheelCirc   = 10        'Wheel Circumference = 10cm

'      *** Load EEPROM ***
eeprom 250, ($33,$32,$28,$0C,$06,$01) 'LCD Init Bytes
eeprom 0, (" Distance / Scale ")      ' 19 Start Message Top Line
eeprom 20, ("Measuring Wagon V2.2")   ' 39 Start Message Bot Line
eeprom 40, ("Adjust Scale then ")     ' 59 Scale Message Top Line
eeprom 60, ("Switch 2 RUN 1:")       ' 75 Scale Message Bot Line

' RAM 80, ("Actual Dist= xxx.xxm")    ' 99 Actual Message Top Line
' RAM 100, ("1:xx.x Dist= xxxx.xm")   '119 Scale Message Bot Line
' or ("1:xx.0 Dist= x.xxxkm")        '119 Scale Message >20M

'*****
'      Initialize and Setup
'*****
PowerOnReset:
    for Temp = 250 to 255
        read Temp,DByte
        gosub SendInitCmdByte
    next
    pause 500
    high Backlight

StartDisplay:
    Dbyte = 128:DStart = 0:DEnd = 19  'Top Line
    gosub ReadEEProm
    DByte = 192:DStart =20:DEnd = 39  'Bottom Line
    gosub ReadEEProm
    'Display Message

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gosub ClearAll
pause 2000

Dbyte = 128:DStart =40:DEnd = 59      'Top Line
gosub ReadEEProm                       'Display Message
DByte = 192:DStart =60:DEnd = 75     'Bottom Line
gosub ReadEEProm                       'Display Message

SetScale:

pause 250
readadc ScaleADC,Temp

if Temp < 40 then S19                  'Scale = 1:19
if Temp < 80 then S20                  'Scale = 1:20.3
if Temp < 120 then S22                 'Scale = 1:22.5
if Temp < 160 then S24                 'Scale = 1:24
if Temp < 200 then S29                 'Scale = 1:29
if Temp >= 200 then S32                'Scale = 1:32

S19:
poke 102,"1":poke 103,"9":poke 104," ":poke 105," "
Scale = 190                            'Scale multiplier
goto SDisplay

S20:
poke 102,"2":poke 103,"0":poke 104,".":poke 105,"3"
Scale = 203                             'Scale multiplier
goto SDisplay

S22:
poke 102,"2":poke 103,"2":poke 104,".":poke 105,"5"
Scale = 225                             'Scale multiplier
goto SDisplay

S24:
poke 102,"2":poke 103,"4":poke 104," ":poke 105," "
Scale = 240                             'Scale multiplier
goto SDisplay

S29:
poke 102,"2":poke 103,"9":poke 104," ":poke 105," "
Scale = 290                             'Scale multiplier
goto SDisplay

S32:
poke 102,"3":poke 103,"2":poke 104," ":poke 105," "
Scale = 320                             'Scale multiplier

SDisplay:
DByte = 208:DStart = 102:DEnd = 105   'Display Scale on Bottom Line
gosub ReadRAM

if RunScale = 1 then RunMode           'Check Run/Scale switch
goto SetScale                          'Repeat if 0

RunMode:

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        gosub DisplayDistScrn          'Update Distance LCD Display
        pause 1000
        setint %00000000,%01000000   'Look for Low on Pin 6

'*****
'
'      Main Loop code starts here
'*****
do
    gosub UpDateDistScrn          'Update Distance LCD Display
loop

'*****
Interrupt:          'Interrupt Code Here
'*****
    high TestLED          'Turn on Test LED
'    If using 2 Slot interrupter then use
'    pulsein 6,1,CalcVar   'Dummy Value

'*****
CalcDistance:      'Distance Mode

    inc TotalRev          'Total Distance + 1 Revolution

    CalcVar = TotalRev * WheelCirc / 10   'x 100mm

    poke 120, WORD CalcVar          'Save this value to RAM

    CalcVar    = CalcVar // 10000      'Get Remainder
    Temp = CalcVar / 1000 + $30        'Convert to ASCII
    if Temp = "0" then
        poke 94," "                  'Leading Space
    else
        poke 94,Temp                 'Save to RAM
    endif

    CalcVar    = CalcVar // 1000      'Get Remainder
    Temp= CalcVar / 100 + $30         'Convert to ASCII
    poke 95,Temp                     'Save to RAM

    CalcVar    = CalcVar // 100       'Get Remainder
    Temp = CalcVar / 10 + $30        'Convert to ASCII
    poke 96,Temp                     'Save to RAM

    poke 97,"."                      'Decimal point

    Temp = CalcVar // 10 + $30        'Convert to ASCII
    poke 98,Temp                     'Save to RAM

'*****
ScaleDistance:    'Calc Scale Distance

    peek 120,WORD CalcVar            'Recover Value

    if CalcVar > 200 then
        FlagBig = 1
        CalcVar = Scale / 10 * CalcVar / 10
        CalcVar    = CalcVar // 10000  'Get Remainder
        Temp = CalcVar / 1000 + $30    'Convert to ASCII

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        poke 113,Temp                'Save to RAM
        poke 114,"."                'Decimal point for kilometers
    else
        CalcVar = Scale * CalcVar / 10
        CalcVar = CalcVar // 10000  'Get Remainder
        Temp = CalcVar / 1000 + $30 'Convert to ASCII
        poke 114,Temp                'Save to RAM
    endif

    CalcVar = CalcVar // 1000        'Get Remainder
    Temp = CalcVar / 100 + $30       'Convert to ASCII
    poke 115,Temp                    'Save to RAM

    CalcVar = CalcVar // 100         'Get Remainder
    Temp = CalcVar / 10 + $30        'Convert to ASCII
    poke 116,Temp                    'Save to RAM

    if FlagBig = 1 then
        Temp = CalcVar // 10 + $30   'Convert to ASCII
        poke 117,Temp                'Save to RAM
        poke 118,"k"                 'Space
    else
        poke 117,"."                 'Decimal point for Meters
        Temp = CalcVar // 10 + $30   'Convert to ASCII
        poke 118,Temp                'Save to RAM
    endif
*****
ResetINT:
    if SensorIn = 0 then ResetINT    'Wait until INT cleared.
    low TestLED                       'Turn off LED
    setint %00000000,%01000000      'Look for Low on Pin 6
    return                             'Done Return from Interrupt

*****
DisplayDistScrn:
    Dbyte = 128:DStart = 80:DEnd = 99 'Display Actual L1
    gosub ReadRam                      'Display Message
    Dbyte = 192:DStart = 100:DEnd = 119 'Display Scale L2
    gosub ReadRAM                      'Display Message
    return                             'Done

*****
UpdateDistScrn:
    Dbyte = 141:DStart = 93:DEnd = 99 'Display Actual L1
    gosub ReadRam                      'Display Message
    Dbyte = 205:DStart = 113:DEnd = 119 'Display Scale L2
    gosub ReadRAM                      'Display Message
    return                             'Done

*****
'           Write or Read or Clear Data from EEPROM Locations 80 - 119
*****
ClearAll:
    TotalRev = 0                       'Clear Totals
    FlagBig = 0                         'Total Distance
    FlagBig = 0                         'Clear Flag

' RAM 80, ("Actual Dist=  xx.xM")      ' 99 Actual Message Top Line
' RAM 100, ("1:xx.x Dist= xxx.xM")    '119 Scale Message Bot Line

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'   Actual = L1   Scale = L2
poke 80,"A":poke 100,"1"
poke 81,"c":poke 101,":"
poke 82,"t":poke 102,"x"
poke 83,"u":poke 103,"x"
poke 84,"a":poke 104," "
poke 85,"l":poke 105," "
poke 86," ":poke 106," "
poke 87,"D":poke 107,"D"
poke 88,"i":poke 108,"i"
poke 89,"s":poke 109,"s"
poke 90,"t":poke 110,"t"
poke 91,"=":poke 111,"="
poke 92," ":poke 112," "
poke 93," ":poke 113," "
poke 94," ":poke 114,"0"
poke 95,"0":poke 115,"0"
poke 96,"0":poke 116,"0"
poke 97,".":poke 117,"."
poke 98,"0":poke 118,"0"
poke 99,"m":poke 119,"m"
return                                     ' Done

'*****
'           Write Data to LCD Command or Data registers from EEPROM or RAM
'*****
ReadEEProm:                               'Read EEPROM
  gosub SendCmdByte                         'Command to LCD
  for Temp = DStart to DEnd                 'Location details
    read Temp,DByte                         'Read EEPROM
    gosub SendDataByte                       'Data to LCD
  next                                       'Again
return                                       'Done

'*****
ReadRAM:                                   'Read RAM
  gosub SendCmdByte                         'Command to LCD
  for Temp = DStart to DEnd                 'Location details
    peek Temp,DByte                         'Read RAM
    gosub SendDataByte                       'Data to LCD
  next                                       'Again
return                                       'Done

'*****
SendInitCmdByte:                           'LCD Initialize
  pause 15                                  'Delay 15mS

SendCmdByte:
  peek $30,RSbit                            'Recover Out0 and Out1
  RSbit = RSbit & %11                       'Send to Command register
  goto SendCmdOrDataByte

SendDataByte:
  peek $30,RSbit                            'Recover Out0 and Out1
  RSbit = RSbit & %11 | RSDATmask           'Send to Data register

SendCmdOrDataByte:

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```
pins = DByte & %11110000 | RSbit      'Put MSB out first
pulsout En,1                          'Give a 10uS pulse on Enable
pins = DByte * %00010000 | RSbit      'Put LSB out second
pulsout En,1                          'Give a 10uS pulse on Enable
return
```

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